

Remarks/Arguments

A Supplemental Information Disclosure Statement (IDS) is filed herewith so that the Examiner will consider art listed in the specification but not previously cited in an IDS.

Claims 1-27 have been canceled and new claims 28 through 51 have been added. New claim 28 is a combination of claims 1, 13, 16 and 17 as originally filed. The remaining originally filed claims, with the exception of claims 13, 16 and 17 which have no correspondence in the new claims, have been renumbered accordingly. Claims 28 and 29 (original claims 1 and 2) have been amended to clarify that the "relative movement" is --relative *lateral* movement--. Claim 31 (original claim 4) has been amended to overcome the rejection under 35 U.S.C. §112, second paragraph. Claim 35 (original claim 8) has been amended to clarify "the sections" recited therein. Claim 40 (original claim 14) has been amended in view of the amendment to claim 1 (now claim 28). Claim 44 (original claim 20) has been amended in view of the amendment to claim 1 (now claim 28). Claim 47 (original claim 23) has been amended in view of the amendment to claim 1 (now claim 28). Claim 51 has been added to claim that the trace heater within the seal of claim 45 applies heat to an outboard side of the seal.

The rejection of claims 1-26 (now claims 28-50) under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement is respectfully traversed. What is claimed in claims 28-50 (original claims 1-26) is the structure of the invention of the present application. While the claimed structure overcomes problems of the prior art, those problems form no part of the invention and are not claimed¹. Accordingly, the assertion that the claim(s) contain subject matter that was not

¹ The words "deformation" and "wear" do not appear in any of the claims as originally filed or as now pending.

described in the specification² is not correct. Further, the advantages of the claimed structure that overcomes the naturally expected deformation and wear of a seal in the prior art are clearly described in the application. Reference is made to paragraph [0041]³ where it is noted that the invention encompasses a resiliently flexible elongate seal defining parallel ridges separated by a web which is magnetically attracted to press the ridges into sealing contact with a cooperating sealing surface. "This arrangement minimises friction during sliding movement but maintains a good seal." One skilled in the art would readily understand that minimizing friction reduces seal wear.

In paragraph [0066] of the present application, there is discussion that the magnetic attraction involves increasing portions of the side sections as the drawer is closed, but the front and rear sections of the sealing surface and of the lid seal contribute no magnetic attraction until the drawer is nearly fully closed, as shown in FIG. 1(d), and those sections come into mutual alignment as the sealing loops align fully with each other. Advantages of the seal structure are further discussed in paragraph [0067]⁴ where it is noted that the structure and operation of the seals used in the present

2 The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

3 The invention also encompasses a resiliently flexible elongate seal defining generally parallel ridges separated by a web, wherein a magnetic or magnetically attractive strip extends along the web to press the ridges into sealing contact with the cooperating sealing surface in use, whereupon the ridges maintain clearance between the web and the sealing surface. This arrangement minimises friction during sliding movement but maintains a good seal.

4 Whilst side sections of the lid seal 4 are in sliding contact with side sections of the sealing surface 5 at the aligned locations, the area of contact is small and presents little hindrance to continued closing movement of the drawer 2. It is to be noted in this respect that magnetic seals present substantially less resistance to sliding movement parallel to or within the plane of the seal interface surfaces than they do to being pulled apart transversely or orthogonally to that plane. Tests indicate that the resistance to sliding is typically about one-third of the resistance to being pulled apart. It is also to be noted that the parts of the sealing loops that experience most of the sliding contact, namely the side sections, are best oriented to retain their structural stability under frictional forces which align with the direction of drawer movement and hence with the direction in which the side sections extend. **This is particularly useful in maintaining the integrity of the flexible lid seal 4 in use.** [emphasis added]

application are ". . . particularly useful in maintaining the integrity of the flexible lid seal 4 in use." That is, since the integrity of the seals is maintained, wear problems are overcome. See also, paragraphs [0068], [0069], [0074] and [0076] of the present application for similar discussion that clearly relate to wear problems and how they are overcome by the seals of the present application.

Since seal deformation and wear are not claimed per se and since the advantages of the claimed seal structure with regard to deformation and wear is clearly and extensively discussed in the specification as set forth above, withdrawal of the rejection of claims 1-26 under 35 U.S.C. §112, first paragraph, is respectfully requested.

The rejection of claim 18 (now claim 42) under 35 U.S.C. §112, first paragraph, is respectfully traversed. It is asserted that "[w]hile anti-magnetic materials are known the applicant does not describe how its particular location to the magnet affects the poles in reducing seal distortion." Claim 42 recites: "The compartment of claim 1 and including anti-magnetic flux means associated with the magnetic means of a sealing loop." This is a structural recitation. The function of the structure recited in claim 42 is discussed in paragraph [0075]⁵ of the present application where it is noted that "[t]he purpose of the anti-magnetic flux plate 10 is to prevent or reduce like-pole repulsion between the magnetic strips, hence reducing seal distortion and assisting seal alignment in use." Thus, as clearly discussed in the application, the anti-magnetic material prevents or reduces like-pole repulsion between the magnetic strips to reduce distortion. Since how the particular location of the anti-magnetic material affects the poles, i.e., by preventing

⁵ The flat web 16 of the lid seal contains a channel running the length of the seal that holds a further magnetic strip 17 within the hollow cross-section of the seal 4. In use, this strip 17 is attracted to the magnetic strip 8 associated with the sealing surface of the drawer 2, to pull the flexible lid seal 4 into sealing engagement with the sealing surface 5. The purpose of the anti-magnetic flux plate 10 is to prevent or reduce like-pole repulsion between the magnetic strips, hence reducing seal distortion and assisting seal alignment in use. Of course, it would also be possible for only one of the strips to be magnetic and for the other to be of a material, particularly ferrous material, that attracts or is attracted to the sole magnetic strip.

or reducing like-pole repulsion, is discussed, withdrawal of the rejection of claim 18 (now claim 42) under 35 U.S.C. §112, first paragraph, is respectfully requested.

Claim 4 (now claim 31) has been amended to overcome the rejection under 35 U.S.C. §112, second paragraph. More particularly, claim 31 now recites that a minor portion of at least one of the sealing loops of the compartment of claim 30 (original claim 3) is out of the plane of the remainder of that loop. Accordingly, it is respectfully requested that the rejection of claim 4 (now claim 31) under 35 U.S.C. §112, second paragraph, be withdrawn.

The rejection of claims 1-3, 5-10, 12 and 13 (now claims 28⁶-30, 32-37 and 39) under 35 U.S.C. §102(b) as being anticipated by WO 02/073104 to Wood is respectfully traversed. The Examiner refers to the Applicant's own disclosure, WO 02/073104, which is acknowledged as prior art in the present application. WO 02/073104, in turn, refers back to the Applicant's earlier International patent application published as WO 01/020237, also acknowledged as prior art in the present application. Much of the subject matter of WO 02/073104 is shared with WO 01/020237. Both documents disclose a drawer-based refrigerator in which a drawer moves relative to a lid fixed to a supporting structure.

WO 01/020237 and WO 02/073104 both disclose an arrangement in which the drawer and/or the lid have a compressible flexible peripheral seal that may be magnetic. When the drawer is closed, the drawer compresses the seal to form an airtight seal between the lid and the drawer. To do so, the drawer moves upwardly against the lid during the final part of its closing movement.

⁶ Claim 28 now contains the limitations of claims 13, 16 and 17 which no longer appear in the present application.

Thus, while there is lateral movement in Wood, there is also vertical movement and such two-component movement is acknowledged as prior art in the present application. The invention of the present application allows designers to avoid the two-component movement - see paragraphs [0027] and [0028] of the present application. Moving the drawer upwardly to compress the seal is completely counter to the lateral, sliding movement of the seal under magnetic attraction as the pending claims require.

It is noted that an alternative embodiment in WO 02/073104 also mentions an arrangement in which there is no provision for vertical movement of the drawer with respect to the lid. Instead, the drawer simply slides horizontally past the close-fitting lid. However, this arrangement requires a small gap between the drawer and the lid. The small gap in turn requires the use of a complete external vapor barrier around the compartment that houses each drawer, so as to overcome the associated problems of moisture transmission and cross-contamination. This arrangement, with a gap between the drawer and the lid, is not relevant to the present invention, which requires a seal between the drawer and the lid.

Claim 1 as amended (now claim 28) recites that "at least one of the sealing loops comprises a resiliently flexible seal that includes means for magnetic attraction to the other sealing loop and **biases said means away from the other sealing loop.**" The exemplary illustrated seal embodiment of Fig. 3 shows rounded lobes 15 supporting the web 16 slightly above and between a pair of rounded sealing ridges defined by the lobes 15, which ridges together define the lowest level of the lid seal 4 and hence the sealing interface with the opposed sealing surface of the drawer 2. Also see paragraph [0074] of the present application. Sealing is effected by mutual alignment of the sealing loops that increases the aggregate magnetic attraction between the sealing loops to overcome the bias of the lobes 15 of the resiliently flexible seal when the drawer is substantially fully closed. No such structure is disclosed or even suggested in WO

02/073104 to Wood. Accordingly, it is respectfully submitted that claims 28-50 (original claims 1-26) and newly added claim 51, patentably distinguish over WO 02/073104 to Wood. Withdrawal of the rejection of claims 1-3, 5-10, 12 and 13 (now claims 28⁷-30, 32-37 and 39) under 35 U.S.C. §102(b) and allowance of these claims and claim 51 are requested.

The rejection of claims 1-10, 12, 13 and 16-26 (now claims 28⁸-37, 39, 42-50) under 35 U.S.C. §103(a) as being unpatentable over GB 602,329 to Earle in view of US 3,055,193 to Smith is respectfully traversed. GB 602329 to Earle is very old prior art, acknowledged in the present application. In Earle, a drawer having insulated sides and an insulated base is provided within the cooled interior of a cabinet. When the drawer is closed, a horizontal member within the cabinet combines with the drawer to define a compartment, the horizontal member thus being a closure in the form of a lid for the drawer. The compartment is provided with cooling coils situated just below the horizontal member.

Little is said in Earle about the junction between the drawer and the horizontal member, apart from the general statement that the drawer is adapted, when in its closed position, to fit "fairly snugly" against the horizontal member. It can only be inferred that the drawer and the horizontal member merely abut against each other. Such abutment will not form a seal as required by all claims of the present application. Since no seal is provided by the abutting drawer and horizontal member, icing and cross-contamination is likely to occur even when the drawer is closed.

⁷ Claim 28 now contains the limitations of claims 13, 16 and 17 which no longer appear in the present application.

⁸ Claim 28 now contains the limitations of claims 13, 16 and 17 which no longer appear in the present application.

As the drawer resides within the cooled cabinet when closed, the outer surfaces of the drawer within the cabinet will be cooled to the temperature of the refrigerator. Accordingly, when the drawer is opened, those cooled outer surfaces will be exposed to ambient air containing moisture that will condense on the cooled surfaces leading to an undesirable accumulation of moisture. Condensation involves transfer of latent heat from water vapor to the drawer, thus increasing the burden of cooling the drawer again when the drawer is returned to the closed position within the cabinet.

Additionally, condensed moisture will be transferred to the interior of the refrigerator when the drawer is closed. The presence of water promotes microbial activity. A further disadvantage of introducing water into the interior of the refrigerator is that it may freeze. Ice can be a particular problem where the drawer of the enclosed compartment abuts the insulated lid, as any ice formation will tend to lock the drawer in a permanently closed position. It is also possible for a build-up of ice to effect sealing ability of a seal, by preventing sealing surfaces from mating correctly. Of course, the accumulation of ice on moving parts of the drawer mechanism is also undesirable as it may impede movement of the drawer. This disadvantage was appreciated by Earle, as a cam mechanism to break any ice formed at the seals or on the runners or other support surfaces of the drawers is shown in Fig. 3 and described in the paragraph bridging the first column of page 3 with the second column of page 3.

US 3055193 to Smith discloses a refrigerator door seal having a combination magnet and strip heater. The seal is for a hinged door. The magnet is simply attracted to the metal cabinet of the refrigerator when the door is closed. The movement of the seal exactly corresponds to the movement of the door. The status of the seal depends entirely on the status of the door that carries the seal, i.e., the seal seals when the door is closed and does not seal when the door is open.

While every material will have some inherent resilience, the cross-sectional profile of the extruded seal is intrinsically stiff. The seal may be minimally compressible under the load of the closing door but it is not materially extensible under magnetic attraction. There is no mention of resilience in the seal or, in particular, of the use of resilience to control movement of the seal into or out of sealing engagement in response to varying levels of aggregate magnetic attraction between the sealing loops as the sealing loops move relative to one another.

Here again, claim 1 as amended (now claim 28) recites that "at least one of the sealing loops comprises a resiliently flexible seal that includes means for magnetic attraction to the other sealing loop and **biases said means away from the other sealing loop.**" The exemplary disclosed seal embodiment of Fig. 3 shows rounded lobes 15 supporting the web 16 slightly above and between a pair of rounded sealing ridges defined by the lobes 15, which ridges together define the lowest level of the lid seal 4 and hence the sealing interface with the opposed sealing surface of the drawer 2. Also see paragraph [0074] of the present application. Sealing is accomplished by mutual alignment of the sealing loops that increases the aggregate magnetic attraction between the sealing loops to overcome the bias of the lobes 15 of the resiliently flexible seal. No such structure is disclosed, suggested or even contemplated by either Earle or Smith. Accordingly, it is respectfully submitted that claims 28-50 (original claims 1-26) and newly added claim 51 patentably distinguish over Earle in view of Smith. Withdrawal of the rejection of claims 28-50 (original claims 1-26) under 35 U.S.C. §103(a) and allowance of these claims and newly added claim 51 are requested.

With regard to claim 18 (now claim 42), while not conceded, the use of anti-magnetic material to prevent unwanted attachment of other ferrous materials may be well known in the art. In any event, the use of anti-magnetic material to prevent or reduce like-pole repulsion between magnetic strips, hence reducing seal distortion and

assisting seal alignment as discussed in paragraph [0075] of the present application is not addressed by the Examiner. Accordingly, the Examiner is respectfully requested to produce authority supporting this use of anti-magnetic material, see MPEP §2144.03.

With regard to claims 24 and 25 (now claims 48 and 49), it is conceded that insulation is used to help increase energy efficiency and/or protect the interior of a container from extreme thermal variances. However, the use of a downward flange of insulation on a drawer or lid next to a seal may interfere with operation of the seal in use. Accordingly, the Examiner is respectfully requested to produce authority supporting the use of a downward flange on a drawer or lid next to a seal, see MPEP §2144.03.

The rejection of claim 14 (now claim 40) under 35 U.S.C. §103(a) as being unpatentable over Earle in view of Smith and further in view of US 4538380 to Colliander is respectfully traversed. As discussed above, Earle and Smith do not disclose every element as claimed in claim 14 (now claim 40) except for parallel ridges. In view of the above remarks made relative to claim 1 (now claim 28), claim 14 (now claim 40) should be considered to patentably distinguish over Earle in view of Smith and further in view of Colliander and withdrawal of the rejection of claim 14 (now claim 40) under 35 U.S.C. §103(a) is requested.

The rejection of claim 15 (now claim 41) under 35 U.S.C. §103(a) as being unpatentable over Earle in view of Smith and further in view of Colliander is respectfully traversed. As discussed above, Earle in view of Smith do not disclose every element as claimed in claim 15 (now claim 41) except for parallel ridges. Claim 15 (now claim 41) requires that "a magnetic or magnetically attractive strip extends along the web to press the ridges into sealing contact with the cooperating sealing surface in use." No such magnetic structure or operation is disclosed or suggested in Earle, Smith and/or

Colliander. Accordingly, it is respectfully submitted that claim 15 (now claim 41) patentably distinguishes over Earle, Smith and Colliander and withdrawal of the rejection of claim 15 (now claim 41) under 35 U.S.C. §103(a) is requested.

The rejection of claims 1-18 and 23-26 (now claims 28⁹-42 and 47-50) under 35 U.S.C. §103(a) as being unpatentable over Earle in view of US 5309680 to Kiel is respectfully traversed. Earle is discussed above. US 5309680 to Kiel discloses a seal system for abutting edges of opposed vertically-hinged side-by-side refrigerator doors. One of the opposed gaskets has a moving magnet restrained by flexible webs so that the magnet can move away from and toward the edge of the associated door. When the door is closed, the magnet lifts away from the edge of the door under magnetic attraction to form a seal with the opposed magnetic gasket of the other door. Opening a door slightly aligns like poles to repel the magnet back toward the door, hence pushing the gaskets apart. This repulsion between like poles as one door nears alignment with the other reduces rubbing contact between the seals as the doors move relative to one another upon opening and closing. As the doors reach alignment, the magnets are realigned so there is attraction between opposite poles to seal.

To better understand the difference between Kiel and the present invention, consider what would happen if Kiel-like seals were applied to a sealing loop closure as used in the present application. As the rear section of the moving loop (the drawer) passes the front section of fixed loop (the lid), there would be fleeting initial like-pole repulsion causing the Kiel seal to pivot clear. However, the initial repulsion would be followed immediately by opposite-pole attraction, which must be sufficiently strong to make a good seal. The net result is that the seals would then jam together before the drawer is even close to being shut.

⁹ Claim 28 now contains the limitations of claims 13, 16 and 17 which no longer appear in the present application.

In paragraph 14 of the identified Office action, it is asserted that "Kiel teaches two cooperating sealing loops (36, 38) [retainer gaskets] each having magnetic means (44, 66). The sealing loop (38) has ridges next to the web as seen in figures 3 and 5." However, the "ridges" (not identified in Kiel) are not structured to "bias[es] said [magnetic attraction] means away from the other sealing loop" as required by claim 1 (now claim 28). Rather, the "ridges" are part of flexible webs 68 and 70 of the retainer gaskets 36, 38 that enable movement of a magnet 66 toward a magnet 44. With reference to Fig. 4 and column 2, line 56 through column 3, line 11, Kiel discloses a retaining gasket 38 that comprises a sleeve 64 enclosing a magnet 66 and flexible webs 68 and 70 that connect the sleeve 64 to a base 62. The webs 68 and 70 are sufficiently flexible that they enable the magnet 66 to move to the position shown in Fig. 4 when doors 22 and 24 are in the closed position. That is, in the closed position, magnets 44 and 66 impart an attracting force on each other, thus moving magnet 66 transversely outward away from the door 24 and toward the magnet 44, until the sleeves 64 and 42 make contact, thereby releasably sealing doors 22 and 24. Thus, any combination of Kiel with Earle would not result in the seal of the present application.

With regard to claim 18 (now claim 42), while not conceded, the use of anti-magnetic material to prevent unwanted attachment of other ferrous materials may be well known in the art. In any event, the use of anti-magnetic material to prevent or reduce like-pole repulsion between magnetic strips, hence reducing seal distortion and assisting seal alignment as discussed in paragraph [0075] of the present application is not addressed by the Examiner. Accordingly, the Examiner is respectfully requested to produce authority supporting this use of anti-magnetic material, see MPEP §2144.03.

With regard to claims 24 and 25 (now claims 48 and 49), it is conceded that insulation is used to help increase energy efficiency and/or protect the interior of a

container from extreme thermal variances. However, the use of a downward flange of insulation on a drawer or lid next to a seal may interfere with operation of the seal in use. Accordingly, the Examiner is respectfully requested to produce authority supporting the use of a downward flange on a drawer or lid next to a seal, see MPEP §2144.03.

Accordingly, it is respectfully submitted that claims 1-18 and 23-26 (now claims 28¹⁰-42 and 47-50) patentably distinguish over Earle and Kiel. Withdrawal of the rejection of these claims under 35 U.S.C. §103(a) and allowance of these claims and claim 51 are requested.

The rejection of claims 1-18 and 23-26 (now claims 28¹¹-42 and 47-50) under 35 U.S.C. §103(a) as being unpatentable over Earle in view of US 5816080 to Jeziorowski is respectfully traversed. Earle is discussed above. Like Kiel, US 5816080 to Jeziorowski also discloses a seal system for abutting edges of opposed vertically-hinged side-by-side refrigerator doors. The flexibility of elongated extrusion gaskets 54 promote movement of the magnets as the poles initially repel one another to facilitate movement past one another and then attract to seal to each other.

As discussed above, claim 1 as amended (now claim 28) recites that "at least one of the sealing loops comprises a resiliently flexible seal that includes means for magnetic attraction to the other sealing loop and **biases said means away from the other sealing loop.**" The exemplary disclosed seal embodiment of Fig. 3 shows rounded lobes 15 supporting the web 16 slightly above and between a pair of rounded sealing ridges defined by the lobes 15, which ridges together define the lowest level of

¹⁰ Claim 28 now contains the limitations of claims 13, 16 and 17 which no longer appear in the present application.

¹¹ Claim 28 now contains the limitations of claims 13, 16 and 17 which no longer appear in the present application.

the lid seal 4 and hence the sealing interface with the opposed sealing surface of the drawer 2. Also see paragraph [0074] of the present application. Sealing is effected by mutual alignment of the sealing loops that increases the aggregate magnetic attraction between the sealing loops to overcome the bias of the lobes 15 of the resiliently flexible seal. No such structure is disclosed or suggested in Earle or Jeriorowski. Accordingly, it is respectfully submitted that claims 1-18 and 23-26 (now claims 28¹²-42 and 47-50) and newly added claim 51, patentably distinguish over Earle and Jeriorowski. Withdrawal of the rejection of claims 1-18 and 23-26 (now claims 28¹³-42 and 47-50) under 35 U.S.C. §103(a) in view of Earle and Jeriorowski and allowance of these claims and claim 51 are requested.

With regard to claim 18 (now claim 42), while not conceded, the use of anti-magnetic material to prevent unwanted attachment of other ferrous materials may be well known in the art. In any event, the use of anti-magnetic material to prevent or reduce like-pole repulsion between magnetic strips, hence reducing seal distortion and assisting seal alignment as discussed in paragraph [0075] is not addressed by the Examiner. Accordingly, the Examiner is respectfully requested to produce authority supporting this use of anti-magnetic material, see MPEP §2144.03.

With regard to claims 24 and 25 (now claims 48 and 49), it is conceded that insulation is used to help increase energy efficiency and/or protect the interior of a container from extreme thermal variances. However, the use of a downward flange of insulation on a drawer or lid next to a seal may interfere with operation of the seal in use. Accordingly, the Examiner is respectfully requested to produce authority supporting the use of a downward flange on a drawer or lid next to a seal, see MPEP

¹² Claim 28 now contains the limitations of claims 13, 16 and 17 which no longer appear in the present application.

¹³ Claim 28 now contains the limitations of claims 13, 16 and 17 which no longer appear in the present application.

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§2144.03.

In view of the above amendments and remarks, it is respectfully submitted that claims 28-51 now pending in the present application are in condition for allowance. Accordingly, Applicant requests reconsideration of the application and allowance of all pending claims.

If the present amendment raises any questions or the Examiner believes that an interview would facilitate prosecution of the present application, he is respectfully requested to contact the undersigned attorney.

Respectfully submitted,
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